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DIRECTORATE OF
INTELLIGENCE

Industrial Facilities
(Non-Military)

Basic Imagery Interpretation Report

Krasnovodsk Petroleum Refinery Group

Krasnovodsk, USSR

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DATE MAY 1970
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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
Imagery Analysis Service

INSTALLATION OR ACTIVITY NAME			COUNTRY	
Krasnovodsk Petroleum Refinery Group			UR	
UTM COORDINATES	GEOGRAPHIC COORDINATES		COMIREX NO.	NIETB NO. 25X1
39TXE668307	40-00-58N 052-57-15E		None	None

MAP REFERENCE

2nd RTS. USATC, Series 200, Sheet M0326-22HL, 3rd ed., May 67, Scale 1:200,000
(SECRET/ 25X1

LATEST IMAGERY USED	NEGATION DATE (If required)
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ABSTRACT

The Krasnovodsk Petroleum Refinery Group is made up of three adjoining refineries: the original one which was moved to Krasnovodsk from Tuapse during World War II, a Lend Lease plant erected at about that same time, and a modern Soviet-designed refinery built since the early 1960's. The Krasnovodsk group is among the top 20 refinery complexes in the USSR, and the newest of its refineries contains the latest, standard-design Soviet processing units. The major production facilities of the Krasnovodsk group include primary crude oil distillation units, thermal and catalytic cracking and reforming units, polymerization and alkylation equipment, a delayed coking unit, and light-ends recovery and gas fractionating units. Also, there is a probable asphalt plant, a petrochemical plant and a probable sulfuric acid plant.

The products of the Krasnovodsk refineries include straight-run, cracked and blended gasolines, kerosene, diesel and fuel oils, gaseous hydrocarbons, petroleum coke, asphaltic materials, and petrochemical products.

In September 1957, the date of the earliest photography used in this study, the two older refineries were complete and in operation. Since that time there have been only minor modifications and additions to the older facilities.

Construction of the modern refinery was started in the early 1960's and has continued up to the present time. The first major section in this refinery, the primary distillation unit, appeared complete by July 1963, but was not seen in operation until late the following year. On the latest coverage, in March 1970, there was one area of major construction and scattered ground scarring to indicate that the modern plant will continue to be expanded.

Production activity was noted at the refinery group on all photography studied from September 1957 to March 1970.

This report includes a detailed line drawing, a photograph of the refinery group, a detailed listing of equipment and facilities with mensuration of storage tanks, and a discussion of the status of facilities.

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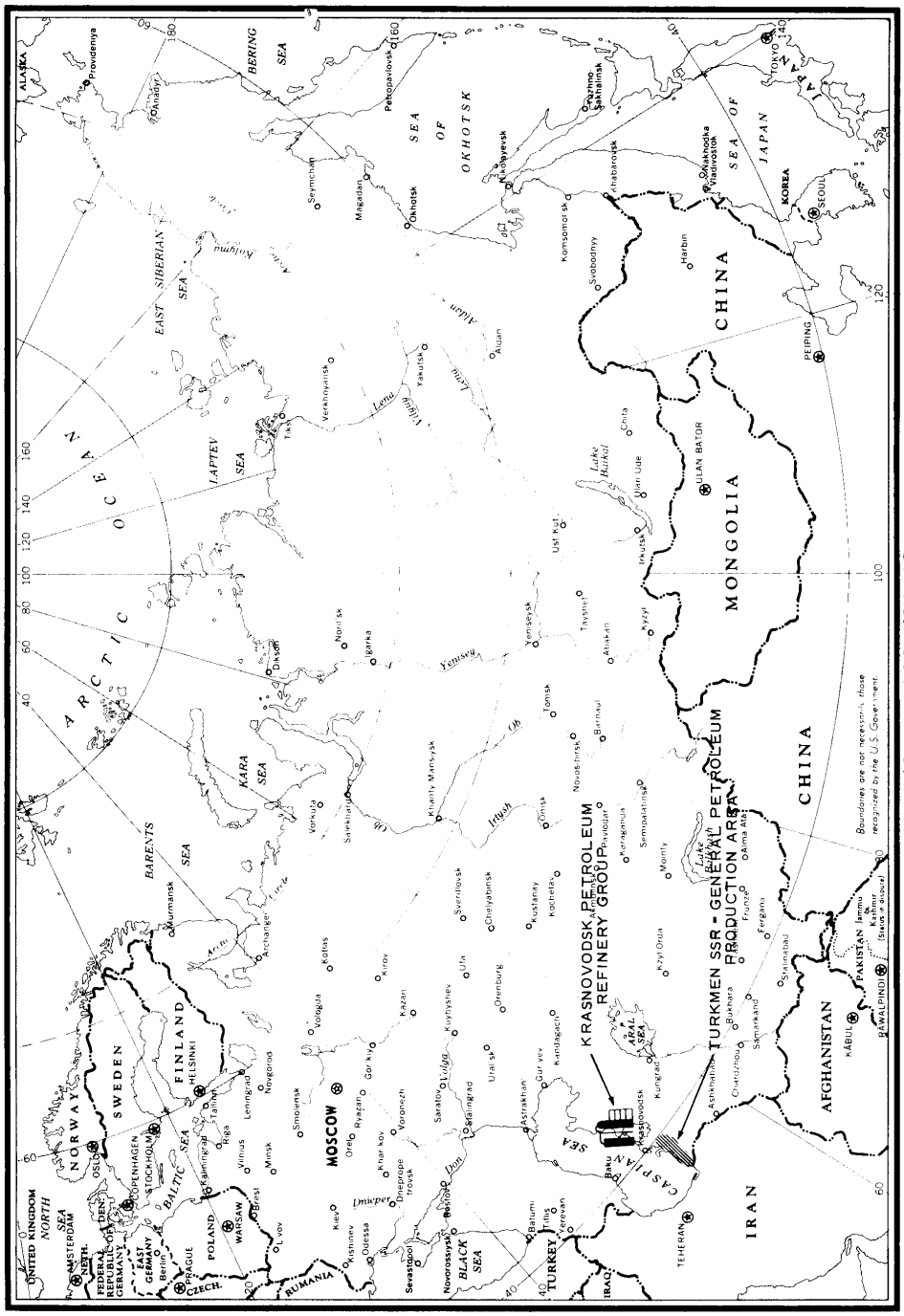

FIGURE 1. LOCATION MAP.

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INTRODUCTION

The Krasnovodsk Petroleum Refinery Group is located on the northwest edge of Krasnovodsk, approximately 1 nautical mile (nm) east of the northwestern extremity of Krasnovodskiy Zaliv (bay). This bay is on the eastern side of the Caspian Sea (see Figure 1). The group, which ranks among the top 20 Soviet refinery complexes, is made up of three contiguous refineries. The original plant was transported to this location during World War II from Tuapse on the eastern shore of the Black Sea. 1/ The second plant was one of four Lend Lease refineries supplied to the USSR by the United States during the early 1940's. 2/ Construction of the modern refinery, which contains the latest, standard-design Soviet processing units, was started in the early 1960's and has continued up to the present time.

Crude oil for this refinery complex is produced in various fields in the Turkmen S.S.R. and transported to the plants by rail and pipelines. 3/ (See Figure 1.) Rail service is provided by spurs from the Ashkhabad-Krasnovodsk railroad.

Electric power for the refineries is produced by the Krasnovodsk Heat and Thermal Power Plant TETS 2 [redacted] which is located approximately 1.25X1 nm southwest of the complex. Power is distributed to the various processing units through transformer substations within the complex.

Good-quality, large-scale photography from June and September 1969 provided the basis for most of the identifications presented in this report. On subsequent coverage of March 1970, parts of the refinery group were cloud covered, but the facilities were in operation and construction of new facilities was continuing.

BASIC DESCRIPTION

Physical Features

The three refineries in the Krasnovodsk group cover an irregularly shaped area which measures approximately 6,740 by 5,750 feet and contains about 680 acres. The area is secured by a system of walls, but a few scattered support buildings and facilities are located outside of these walls. Three of the more significant support facilities which lie outside of the main complex perimeter are a crude oil storage area of about 35 acres, a waste water treatment facility of about 30 acres, and a gas products storage and shipping area of about six acres. (See Figures 2 and 3.)

On overhead photography, the processing facilities of the three refineries can be easily distinguished, but most of the support and storage facilities appear to be in common use by the entire group. In the older refinery and in the Lend Lease plant the processing units are quite close together. In contrast, the processing units at the modern refinery are widely spaced as per the present-day standard Soviet construction practices observed in various refineries throughout the country.

Operational Functions

The major refining equipment presently constructed and in operation at this refinery complex includes primary crude oil distillation units, thermal and catalytic cracking and reforming units, polymerization and alkylation equipment, a delayed coking unit, and light ends recovery and gas fractionating units. Also, there is a probable asphalt plant, a petrochemical (probable detergent) plant and a probable sulfuric acid production plant.

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The products of this complex include straight-run, cracked and blended gasolines, kerosene, diesel and fuel oils, gaseous hydrocarbons, petroleum coke, asphaltic materials and petrochemical products.

Construction and Operational Status

The earliest photography used in this study is from September 1957. At that time the two older refineries were complete and in operation. Since that time there have been modifications and additions to the older facilities, but the most significant construction has been in the modern refinery which was started early in the 1960's.

Coverage of July 1962 showed a large increase in storage capacity with approximately 95 percent of the present storage tanks completed. In the original refinery, an additional furnace had been added to the probable primary distillation unit, thus increasing its capabilities. The probable sulfuric acid production facilities had been constructed and work on the petrochemical plant was nearing completion. In the Lend Lease plant, the capacity of the primary distillation unit had been increased by the addition of a pipe furnace and at least one fractionator. Also, minor additions were noted in storage and support facilities. In the new refinery, work on the primary distillation unit was in the very early stages. The construction support area was completed and large quantities of construction materials were observed here and scattered throughout the refinery site.

By July 1963, the primary distillation unit in the new refinery appeared to be complete, but not yet in operation. The processing equipment in the treating area was in place and construction had been started on the fluid-bed catalytic cracker and cooling facilities. Construction of the waste water treatment facilities had also just begun. No significant changes were noted in the older refineries.

On photography of December 1964, the only change noted in the older refinery areas was the expansion of facilities in the shipping area. At the new refinery, work was continuing on the cracking unit and excavation had been started for the coke storage pit at the delayed coking unit. Additional support facilities had also been completed.

Coverage of August 1965 showed that dismantling of some of the older equipment, including one topping still, was taking place in the original plant. In the Lend Lease refinery, numerous processing tanks and equipment had been constructed in the desalting area. This could indicate a change in function for these facilities from the desalting of crude oil to the desalinization of sea water. In the new refinery, the rate of construction had apparently been increased with a new gas processing unit nearing completion, the catalytic cracker and delayed coking unit in mid-to-late stages of construction, and excavation for the combination secondary processing unit started.

By June 1966, the delayed coking unit, the newly constructed probable gas fractionating units, and probably the catalytic cracker were in operation. Additional support facilities and the gas storage area were also completed. There were no apparent changes in the older refineries.

No further significant changes were noted in the complex until June 1968. At that time, the combination secondary processing unit was nearly complete and two new units in the gas processing area and the probable catalytic reforming unit were in the very early stages of construction.

By September 1969, the combination unit, the probable catalytic reformer and one of the gas processing units were complete. In the original refinery minor amounts of dismantling or renovating of facilities were noted. Additional settling basins were being constructed at the waste water treatment plant.

On the latest coverage used in this study, that of March 1970, construction was continuing on a major unit in the gas processing area, and ground scarring at other locations indicated probable further planned expansion.

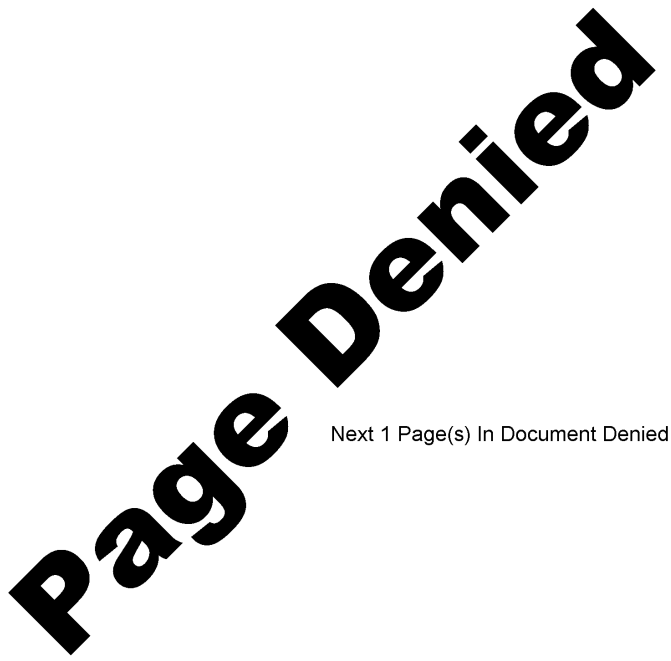
Facilities and Equipment

The following table lists the functional areas and the facilities and equipment in the complex. All of the items shown are keyed to Figure 3. In the table, measurements are rounded to the nearest half meter.

Table I. Equipment and Facilities at the Krasnovodsk Petroleum Refinery Group

ORIGINAL REFINERY

Area	Functional Description	Equipment and Facilities
A	Storage and Support	21 Miscellaneous buildings
B	Probable Primary Distillation	1 Row of fractionators (3 columns) 5 Processing columns (stabilizers/stripping columns/mixers) 3 Pipe furnaces 1 Pump and control building 7 Support buildings 5 Possible coolers or buildings 3 Banks of heat exchangers 2 Banks of accumulators 1 Row of 4 mixing tanks with 4 horizontal settling drums 5 Cylindrical storage tanks 2 [redacted] 25X1 3 3-meter-diameter 12 Horizontal storage tanks 1 12-meter-long 8 9-meter-long 3 [redacted] 25X1
C	Products Treating and Storage	1 Processing building 3 Mixing towers or tanks 4 Batch agitators 2 Blending tanks 1 [redacted] 25X1 1 3 Support buildings 1 Building u/c or being dismantled 43 Cylindrical storage tanks 2 [redacted] 25X1 2 12-meter-diameter 7 9-meter-diameter 22 [redacted] 25X1 6 6-meter-diameter 4 [redacted] 25X1
D	Crude Oil and Products Storage	5 Support buildings 24 Cylindrical storage tanks 18 [redacted] 25X1 5 12-meter-diameter 1 9-meter-diameter
E	Possible Gas Processing	2 Compressor buildings 2 Banks of heat exchangers 1 Support building 4 Cylindrical storage tanks 3 [redacted] 25X1 1 3-meter-diameter 4 Horizontal storage tanks, 15 meters long
F	Support	15 Miscellaneous buildings 2 Buildings u/c 4 Cylindrical storage tanks 3 [redacted] 25X1 1 3-meter-diameter 2 Horizontal storage tanks, [redacted] 25X1



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Area	Functional Description	Equipment and Facilities
G	Combination Distillation, Thermal Cracking and Light-ends Recovery	1 Primary distillation unit with 1 atmospheric/topping column, 5 small columns (stabilizers/separators/treaters), 1 control/pump building and 3 support buildings 2 Thermal cracking units each with 4 columns (reactor, flash tower, fractionator and stabilizer), 1 control/pump building and 4 support buildings, and 1 bank of heat exchangers or accumulators 6 Pipe furnaces (1 being repaired or dismantled) 1 Light-ends recovery unit with 4 columns and 6 probable accumulator drums, 1 compressor and 2 support buildings, 1 building u/c, 1 bank of heat exchangers, 2 cylindrical storage tanks [redacted] 25X1 [redacted], and 4 horizontal storage tanks 25X1 (3-12 meters long and 1-15 meters long)
H	Petrochemical (Probably Detergent Production)	Facilities shown on line drawing, but not enumerated
I	Probable Asphalt Production	2 Probable deasphalting towers 5 Stripping columns 1 Small furnace 3 Miscellaneous buildings 1 Blending tank, 9 meters in diameter 15 Cylindrical storage tanks 1 [redacted] 25X1 2 9-meter-diameter 8 [redacted] 25X1 1 6-meter-diameter 3 [redacted] 25X1 4 Horizontal storage tanks 3 [redacted] 25X1 1
J	Probable Sulfuric Acid Production	Facilities shown on line drawing, but not enumerated
K	Receiving, Storage and Shipping	13 Storage and support buildings 2 Buildings u/c or being dismantled 3 Covered loading racks 30 Cylindrical storage tanks 16 9-meter-diameter 7 [redacted] 25X1 7 9 Horizontal storage tanks 2 [redacted] 25X1 1 12-meter-long 3 [redacted] 25X1 3 9-meter-long
L	Water Treatment	6 Miscellaneous buildings 3 Oil-water separator, skimming and storage basins. 1 Blowdown stack and pit 4 Cylindrical storage tanks 2 9-meter-diameter 1 [redacted] 25X1 1 3-meter-diameter 1 Horizontal storage tank, 12 meters long

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LEND LEASE REFINERY

Area	Functional Description	Equipment and Facilities
A	Administration and Support	64 Administration, storage and support buildings 1 Water basin 4 Horizontal storage tanks, 12 meters long
B	Steam Plant and Desalting	1 Boilerhouse 1 Large processing building (approximately 120 by 36 meters) with 4 attached clusters of processing equipment 6 Groups of mixing, processing, and settling tanks (total of 53 tanks) 6 Cylindrical treating or storage tanks 3 [redacted] 25X1 3 3-meter-diameter 8 Cylindrical storage tanks 1 24-meter-diameter 3 15-meter-diameter 2 9-meter-diameter 2 [redacted] 25X1 11 Miscellaneous buildings
C	Combination Topping, Secondary Processing, and Treating	8 Groups of processing equipment including topping, thermal reform and cracking, caustic wash and polymerization units.* Scaffolding encloses most of the equipment and precludes detailed item identification. 5 Pipe furnaces 1 Pump and control building 1 Compressor building 16 Miscellaneous buildings 3 Mixing or storage tanks, [redacted] 25X1 [redacted] 25X1 22 Cylindrical storage tanks (intermediates) 1 18-meter-diameter 3 12-meter-diameter 7 [redacted] 25X1 9 2 3-meter-diameter 6 Horizontal storage tanks 4 12-meter-long 2 [redacted] 25X1
D	Treating	1 Unit with 1 building and attached mixing towers, 1 blending tank [redacted] 25X1 [redacted], and 2 cylindrical storage tanks 25X1 (9 meters in diameter) 1 Unit with 1 processing/control building with 2 settling or washing drums and 3 mixing towers, 1 support building and 1 large-diameter horizontal storage tank. 1 Unit with 1 processing building and attached cluster of equipment, 1 mixing tower with settling drum, 1 cylindrical tank (3 meters in diameter), and 8 small diameter horizontal tanks (7-6 meters long and 1- [redacted] 25X1 5 Cylindrical storage tanks 1 4 [redacted] 25X1

[redacted] 25X1

Area	Functional Description	Equipment and Facilities
E	Crude Oil and Intermediates Storage	4 Pump and support buildings 28 Cylindrical storage tanks 3 36-meter-diameter 6 24-meter-diameter 2 [redacted] 25X1 2 18-meter-diameter 9 15-meter-diameter 3 [redacted] 25X1 3 2 Separators/cylindrical storage tanks each 3 meters in diameter 3 Settling drums/horizontal storage tanks 1 [redacted] 25X1 1 1 9-meter-long
F	Catalytic Cracking and Treating	1 Fixed bed catalytic cracking unit with reactor cases enclosed in scaffolding (Houdry 6 case unit*) 2 Fractionating/stripping columns 1 Tar separator 1 Compressor building and 4 blowers 1 Processing and control building 8 Miscellaneous buildings 3 Pipe furnaces 1 Large cooling box 2 Banks of accumulators/cooling coils 5 Separator towers 2 Mixing or storage tanks, 3 meters in diameter 1 Cylindrical storage tank, [redacted] in diameter 25X1 2 Horizontal storage tanks 1 15-meter-long 1 12-meter-long
G	Gas Processing	1 Processing unit with attached control building, a row of 3 columns and 2 accumulator drums on one side and 4 columns along the opposite side 1 Gas compressor building 4 Support buildings 1 Stripping/absorption column 3 Coolers 1 Bank of accumulators 2 Cylindrical storage tanks 1 [redacted] 25X1 1 3-meter-diameter 11 Horizontal storage tanks 5 18-meter-long 2 [redacted] 25X1 1 2 9-meter-long 1 [redacted] 25X1
H	Products and Intermediates Storage	2 Pump houses 5 Support buildings 46 Cylindrical storage tanks 2 30-meter-diameter 5 24-meter-diameter 3 [redacted] 25X1 1 21-meter-diameter 3 [redacted] 25X1 6 15-meter-diameter 13 12-meter-diameter 3 [redacted] 25X1 6 9-meter-diameter 2 [redacted] 25X1 1 6-meter-diameter 1 [redacted] 25X1 1 Spherical tank, 9 meters in diameter

25X1

Area	Functional Description	Equipment and Facilities
I	Storage and Support	23 Storage and support buildings 2 Cylindrical storage tanks, [redacted] 25X1 [redacted] 25X1 5 Horizontal storage tanks 1 [redacted] 25X1 2 6-meter-long 2 Covered (not measured)
J	Light Ends (Gas) Storage	2 Pump houses 1 Support building 7 Cylindrical storage tanks 2 6-meter-diameter 4 [redacted] 25X1 1 3-meter-diameter 4 Spherical tanks, [redacted] 25X1 32 Horizontal storage tanks 16 [redacted] 25X1 16 Covered (not measured)
K	Primary Distillation	1 Row of 6 columns including prefractionator, atmospheric and vacuum columns and 3 stabilizers and stripping columns 1 Row of 4 stabilizer or absorber towers 1 Pump and control building 5 Banks of condensers/cooling coils 1 Bank of accumulators/heat exchangers 2 Pipe furnaces 1 Row of 4 mixing columns with 6 settling drums 1 Support building 1 Blending tank, [redacted] 25X1 10 Cylindrical storage tanks (6 for chemicals) 3 [redacted] 25X1 7 3-meter-diameter 6 Horizontal storage tanks 2 12-meter-long 4 Not measured
L	Alkylation	1 Processing and control building with 3 horizontal reactors/contactors and 1 washing drum, and a probable acid recovery and refrigeration section 1 Large compressor building with associated cooling equipment and 3 small diameter, horizontal storage tanks (not measured) 1 Pump building 4 Columns (depentanizer, deisobutanizer, depropanizer and rerun columns*) with 3 accumulator drums 1 Probable treatment/caustic wash facility with: 1 building with 2 attached columns and 2 settling drums; 1 building with 3 horizontal washing/settling/storage drums; and 1 cylindrical storage tank, 9 meters in diameter 1 Row of 5 possible drying or scrubbing towers 2 Horizontal storage tanks, [redacted] 25X1 2 Miscellaneous buildings 2 Large-diameter, horizontal storage tanks, 6 meters long

*Note: Type of units present, as shown on the Lend Lease plans from the American company involved in the construction.

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MODERN REFINERY

Area	Functional Description	Equipment and Facilities
A	Products Storage	7 Miscellaneous buildings 1 Separately secured area with 4 buildings 54 Cylindrical storage tanks 1 24-meter-diameter 15 [redacted] 25X1 15 15-meter-diameter 12 12-meter-diameter 7 [redacted] 25X1 4 8 Horizontal storage tanks, [redacted] 25X1 long 2 Water storage basins
B	Delayed Coking and Probable Crude Oil Distillation	1 Coking unit with 4 coking chambers and attached control section with a cylindrical tank [redacted] on roof 25X1 1 Row of 5 columns (includes fractionators) and a probable reboiler drum 1 Control and pump building with accumulator drums on roof 2 Pipe furnaces 1 Cooler 7 Miscellaneous buildings 1 Building u/c 1 Conveyor from coking unit to storage pit 4 Overhead cranes 1 Coke storage pit 1 Excavation, possibly for coke storage pit 19 Cylindrical storage tanks 6 15-meter-diameter 3 9-meter-diameter 10 3-meter-diameter 5 Horizontal storage tanks 1 12-meter-long 4 6-meter-long
C	Treating, Packaging and Shipping	10 Batch agitators 2 Pump and control buildings 2 Small petrochemical type furnaces 1 Storage/drum fabrication building 5 Support buildings 2 Small buildings/coolers 1 Building u/c 1 Excavation for building 13 Cylindrical storage tanks 1 18-meter-diameter 3 [redacted] 25X1 6 12-meter-diameter 1 [redacted] 25X1 2 3-meter-diameter
D	Catalytic Cracking	1 Fluid-bed catalytic cracker with reactor, regenerator, catalyst hopper, 1 pipe furnace, 1 compressor and control building, 1 small heater and 1 support building 1 Fractionator with a pump and control building 1 Structure with cooling coils and accumulator on top 2 Compressor/pump buildings 1 Light-ends unit with 4 columns and a control/processing building 1 Building with 2 attached absorber/drying towers 1 Large compressor building 1 Support building

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25X1

Area	Functional Description	Equipment and Facilities
D	Catalytic Cracking (Cont'd)	6 Cylindrical storage tanks 2 [redacted] 4 3-meter-diameter 1 Small water storage basin
E	Probable Catalytic Reforming	1 Row of 4 columns (possible reactors) 4 A-frame furnaces (2-single and 2-double furnaces) 1 Control/pump/compressor building with accumulators on roof 1 Cooling rack 3 Miscellaneous support buildings
F	U/1 Combination Secondary Processing	1 Unit with processing building and 5 attached towers or columns (possible feedstock purification), 1 heater, a row of 3 columns (possible reactors) with a control building, 1 pump building, 1 support building and 2 accumulator drums 1 Bank of large heat exchangers 1 Unit with 1 row of 3 columns, 2 pipe furnaces, 1 pump building and 1 control building 1 Large pump/compressor building with 4 horizontal accumulators 2 Support buildings 6 Cylindrical storage tanks, 15 meters in diameter
G	Primary Distillation	1 Multistage fractionating unit with 6 columns (1 vacuum, 2 atmospheric and 3 stabilizers/stripping columns), 1 control building, 2 pump buildings, 1 structure with accumulators on top, 2 pipe furnaces, 3 banks of condensers/heat exchangers, 2 recirculation (irrigation) towers, 1 bank of accumulators, 1 cooler, 6 horizontal treating drums (desalting), 4 horizontal treating/storage drums, 3 spherical tanks (12 meters in diameter) and 10 cylindrical storage tanks (1-6 meters and 9-3 meters in diameter) 17 Miscellaneous buildings 15 Cylindrical storage tanks 3 24-meter-diameter 3 [redacted] 4 6-meter-diameter 5 3-meter-diameter
H	Support	6 Miscellaneous buildings 1 Separately secured sub-station with 1 building 4 Cooling towers (2 with 5 cells and 2 with 3 cells) 1 Blowdown stack and pit 1 Water separator/storage basin u/c
I	Gas Processing	1 Probable gas fractionating unit with 3 columns, a compressor/control building with accumulator on roof and 1 horizontal storage tank [redacted], 2 absorbers/dryers, 1 building with 2 columns and 5 horizontal pressure-type tanks [redacted], a compressor building with 1 column and 3 cylindrical tanks (3 meters in diameter), 1 treating building with 7 horizontal drums and 1 support building

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Area	Functional Description	Equipment and Facilities
I	Gas Processing (Cont'd)	1 Processing unit u/c - mid-to-late stage (equipment not enumerated) 1 Possible gas fractionating unit with 4 columns, 1 compressor/control building, 5 absorber/drying towers, 1 gasholder (15 meters in diameter), 2 cylindrical tanks [redacted] and 2 horizontal tanks (6 meters long) 25X1 1 Unit with 7 columns/towers (dryers/treaters/absorbers), 1 compressor building and 1 gasholder (21 meters in diameter) 2 Compressor buildings 5 Miscellaneous support buildings 4 Cooling towers (2 with 5 cells, 1 with 3 cells and 1 with 2 cells) 1 Water treatment building 2 Water treatment/separator basins 1 Blowdown stack and pit 6 Cylindrical storage tanks, [redacted] diameter 25X1 35 Horizontal storage tanks 5 15-meter-long 30 Covered (not measured)
J	Construction Support	12 Storage and support buildings 2 Overhead cranes serving large open storage area
K	Water Treatment and Cooling	1 Large treating building 12 Cooling towers each with 5 cells 6 Miscellaneous buildings 3 Water treatment/separator basins 3 Horizontal treatment tanks, 12 meters long 2 Cylindrical storage tanks 1 [redacted] 25X1 1

CRUDE OIL STORAGE

1 Building
8 Buried reservoirs (not measured)
10 Cylindrical storage tanks
4 Semiburied, [redacted] 25X1
4 [redacted] (2 possible floating roof) 25X1
2 18-meter-diameter

GAS PRODUCTS STORAGE AND SHIPPING

5 Miscellaneous buildings
1 Rail car loading rack
20 Horizontal storage tanks
14 15-meter-long
6 Covered (not measured)

WASTE WATER TREATMENT FACILITIES

6 Miscellaneous buildings
3 Cylindrical storage tanks (not measured)
8 Settling, separator, and storage basins
4 Basins u/c

REFERENCES

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Map

2nd RTS. US Air Target Chart, Series 200, Sheet M0326-22HL, 3rd edition, May 1967. Scale 1:200,000 (SECRET [redacted] 25X1

Documents

1. CIA. CRS/IR File No. 7000563, FDD Summary No. 1516, 18 Oct 57 (OFFICIAL USE ONLY)

2. CIA. CRS/IR File No. 7000563, Plant Summary, no date (SECRET)

3. The Petroleum Publishing Co. International Petroleum Encyclopedia, 1969 edition (UNCLASSIFIED)

Requirement

COMIREX NO2

Support Number 420509

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